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Contrasting growth habits of some arid-loving southern African aloes

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Introduction

There are several species of stemless and shrubby, clump-forming aloes that grow in the generally flat, arid areas of western South Africa and southern Namibia. Their habitats receive very little rain, so plants survive mainly due to the coastal fogs and condensation from the sudden overnight temperature drop. Despite similarities of habitat, there are some interesting differences between these species.

Aloe arenicola

Aloe arenicola has a relatively long, roughly 400 km distribution along the low altitude coastal strip stretching north from Lambert's Bay to Alexander Bay at the mouth of the Orange River (Van Wyk & Smith, 2014). It is quite a distinctive plant making it easy to identify. Mature plants form medium-sized shrubs composed of numerous creeping stems. There are distinct juvenile and adult forms. During the juvenile stage, the leaves are more triangular in shape with thin, creeping stems. Figs. 1 and 2 show plants in the Port Nolloth area in September 2015. Juvenile and adult forms were seen at the same site about 30–40 m apart. From a distance, the two forms look so different that they appear initially to be two different species. The two forms appear differently coloured, the juvenile form having purple leaves whilst the adult form generally has the more usual bluish-green coloured leaves associated with aloes in general. The juvenile form also has an absence of white spots on the upper surface of the leaves.

Textbook pictures of the mature form show flowering clumps of rosettes from about 3–30 rosettes (Reynolds, 1950: Fig. 416; Van Wyk & Smith, 2014: p.125). These photos appear to show no evidence of die-back of the outer



Fig. 1. Mature *A. arenicola* near Port Nolloth, September 2015. (Photo: Ivor Crook).



Fig. 2. Juvenile form of *A. arenicola*. (Photo: Ivor Crook).

ring of rosettes. However, fig. 1 here shows a plant with a clump where the outer ring of rosettes has died-back and only the central part of the plant has remained and flowered. The coastal strip where this species grows is typically an arid environment: it is confined to the sandveld on the west coast of South Africa. Indeed, the name *arenicola* means 'sand-inhabiting'. However, the climate is variable from year to year. Often several drier than average winters will follow each other and this was known to be the case in 2015. Perhaps the loss of the outer rosettes is an adaptive strategy when the ground contains insufficient water content to allow all the plants to flower successfully.

Aloe claviflora

The growth form of this species contrasts significantly to that of *A. arenicola*. *Aloe claviflora* has a very wide distribution and is found over a large range from southern Namibia through the western provinces of South Africa, tending to favour open, well drained areas. The plants illustrated here (figs. 3 and 4) were



Fig. 3. *Aloe claviflora* showing central die-back. Old Road from Upington to Kakamas. (Photo: Les Pearcy).



Fig. 4. *Aloe claviflora* General view of clumps. Old Road from Upington to Kakamas. (Photo: Les Pearcy).

growing to the east of Upington on the old road that runs parallel with the tarmacked N14 towards Kakamas. They tend to form large rings of rosettes several metres across with a space in the centre where the original rosette would have occurred before dying back. The species is very common and due to its growth form is easily recognised in the field. The Afrikaans name, *kraalaalwn* ('kraal aloe'), is most apt with the ring of rosettes reminiscent of the round cattle enclosures.

Other southern African 'kraal aloes': *Aloe asperifolia*

In addition to the widespread *A. claviflora*, there are five other 'kraal aloes' in Namibia and South Africa. Reynolds (1950) grouped these as Series 13 *Asperifoliae* that includes the following species: *Aloe asperifolia*, *A. pachygaster*, *A. falcata*, *A. viridiflora*, in addition to *A. claviflora*. All these aloes are either stemless or have creeping, rooting procumbent stems with obliquely-erect rosettes. Their leaves are thick with roughed (asperous) surfaces. Of this group of species, *A. asperifolia*, *A. claviflora*, *A. falcata* and *A. pachygaster* are very closely related in terms of their growth habit, but their inflorescences and flowers are very distinct. In contrast, however, *A. viridiflora*, with its larger solitary rosettes, does not fit well with the rest of this group (Reynolds, 1950) as it is not a true 'kraal aloe'. In addition, *Aloe namibensis* can be added to this group because this species was described twenty years after Reynolds published his magnum opus. Apart from *A. claviflora* and *A. falcata*, all these species are Namibian endemics with very narrow distribution ranges.

Here we focus on just one Namibian species, *A. asperifolia*, because one of us (CCW) has a friend, Janet Haresnape, who photographed this species on his behalf (figs. 5 and 6).

Aloe asperifolia has a very limited distribution in western Namibia, where it grows in a narrow range about 50–120 km inland

from the coast in the Namib desert from the Kuiseb River to north of the Hoarusib River (Rothmann, 2004). It has the same 'kraal aloe' growth form as *A. claviflora* (fig. 5) with dense circular groups of 20–40 rosettes. Its leaf surfaces are rough like sandpaper, hence the name *asperifolia* meaning 'rough-leaved'. According to Rothmann (2004) "Plants do not flower every year but may flower from March to April with some even as late as July". Janet observed just a single specimen in May and the plant had long since finished flowering but was in fruit (fig. 6). Note that in this species



Fig. 5. *Aloe asperifolia* growing in the Namib Section of Namib-Naukluft National Park, Namibia, May 2013. Note the extremely harsh, arid environment. (Photo: Janet Haresnape).



Fig. 6. Closer view of the plant of *A. asperifolia* shown in Fig. 5 with fruit. (Photo: Janet Haresnape).

the inflorescences and infructescences are horizontally arranged. According to Carter *et al.* (2011), the closest relative of *A. asperifolia* is *A. namibensis*, but the latter species has dense, erect inflorescences as opposed to the horizontally-arranged, lax inflorescences of the former species. When not in flower these two species can be easily confused. *Aloe namibensis* is very rare and even more localised than *A. asperifolia*, occurring in a small area just south of the distribution range for the latter species (Rothmann, 2004).

Plants in Cultivation

One of us (CCW) has tried to grow plants of *A. arenicola*, *A. asperifolia*, *A. claviflora* and *A. pachygaster*, all of which, apart from the first, come from extremely arid environments. As a consequence of this, only the first was relatively easy to grow. In contrast all the 'kraal aloes' have proved to be very difficult in cultivation and virtually impossible to grow well. Seedlings of *A. claviflora* (fig. 7) are typical of most aloes in that their juvenile form has distichous leaves, whereas at maturity they develop into typical rosettes.



Fig. 7. Seedling of *A. claviflora*. (Photo: Colin Walker).

The most impressive cultivated specimen of *A. claviflora* one of us (CCW) has ever seen was growing outdoors at the Jardin de Cactus on Lanzarote (fig. 8). Note the volcanic lava the plant was growing in, but it was generously irrigated. Note too the typical inflorescence of this species: horizontally orientated with densely-arranged flowers. Individual flowers are 'club-shaped', hence the name *claviflora*.

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Fig. 8. *Aloe claviflora* flowering at the Jardin de Cactus, Lanzarote. (Photo: Colin Walker).